ORDER NO. AD9802021C2

Service Manual

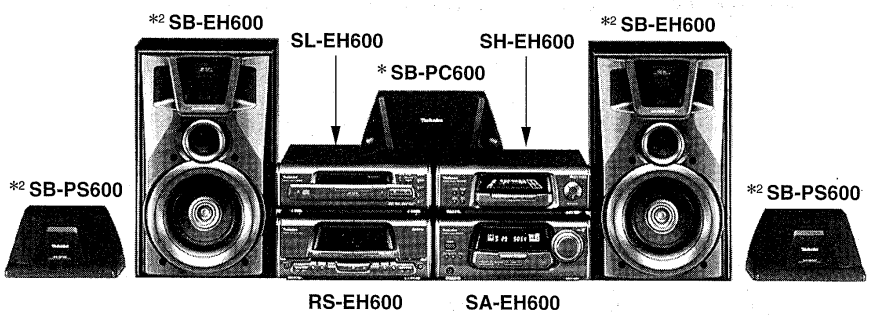
Sound Processor

SH-EH600

DOLBY SURROUND PRO•LOGIC

Colour
(H) ..... Gray Type

Area
(E) ..... Europe.



System	SC-EH600
Sound Processor	**SH-EH600**
Tuner / Amplifier	SA-EH600
CD Changer	SL-EH600
Cassette Deck	RS-EH600
Front Speakers*2	SB-EH600
Center Speaker*2	SB-PC600
Surround Speakers*2	SB-PS600

*: Made in PAES

Because of unique interconnecting cables, when a component requires service, send or bring in the entire system.

Specifications

EQ/SFP Section

MANUAL GEQ:
Center frequency; 100 Hz, 315 Hz, 1 kHz, 3.15 kHz, 10 kHz
Level control; ± 3, ± 6, ± 9 dB
EQ SPACE mode
3 modes; HALL, CLEAR, HEAVY
Acoustic Image Selector: 36 pattern

Pre-amplifier Section

Input sensitivity/impedance:
VCR; 250 mV/15 kΩ
VDP; 250 mV/15 kΩ
Output level:

DOLBY PRO LOGIC Section

PRO LOGIC mode: SURROUND, 3 STEREO
CENTER mode: NORMAL, WIDE, PHANTOM
DELAY TIME: 20 ms (Fixed)

Spectrum analizer Section

Display mode: NORMAL, PEAKHOLD, AURORA

General

Dimensions: 287 (W) × 89 (H) × 273.5 (D) mm
Weight: 1.1 kg

Note: Specifications are subject to change without notice. Weight and dimensions are approximate.

Manufactured under license from Dolby Laboratories Licensing Corporation.
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⚠WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product.
Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

Technics®

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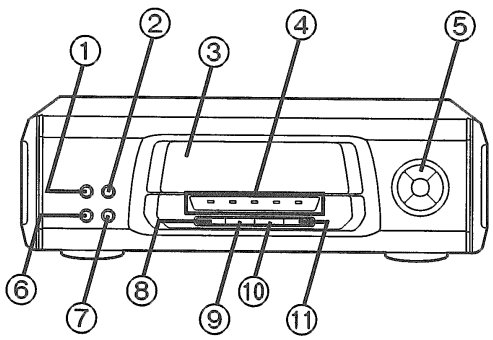
■ Contents

	Page
Location of Controls	2
Operation Checks and Main Component Replacement Procedures	3, 4
To Supply Power Source	5
To check signals	5
Schematic Diagram	6 ~ 8
Printed Circuit Board Diagram	9
Type Illustration of IC's, Transistors and Diodes	10
Wiring Connection Diagram	10
Terminal Function of IC's	11
Block Diagram	12
Replacement Parts List	13, 14
Cabinet Parts Location	14

NOTE:

Refer to the service manual for Model No. SA-EH600 for information on "Accessories", "Connections", "Installation" , "Operations" and "Packaging".

■ Location of Controls



① EQ SPACE on/flat button (EQ SPACE ON/FLAT)
② Display mode select/demonstration button (DISP MODE/-DEMO)
③ Display
④ DOLBY PRO LOGIC indicators (SURROUND, 3 STEREO, NORMAL, WIDE, PHANTOM)
⑤ Multi control buttons (MULTI CONTROL, ▶, ▲, ◀, ▼)
⑥ Acoustic image EQ button (ACOUSTIC IMAGE EQ)
⑦ EQ SPACE preset/manual select button (PRESET/MANUAL)
⑧ DOLBY PRO LOGIC on/off button (DOLBY PRO LOGIC, OFF/ON)
⑨ DOLBY PRO LOGIC mode select button (MODE)
⑩ DOLBY PRO LOGIC test signal button (TEST)
⑪ DOLBY PRO LOGIC center mode button (CENTER MODE)

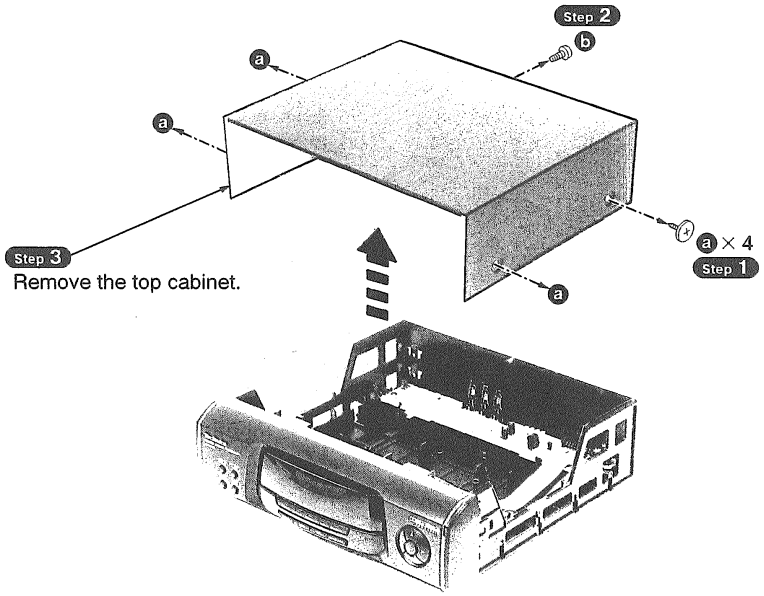
■ Operation Checks and Main Component Replacement Procedures

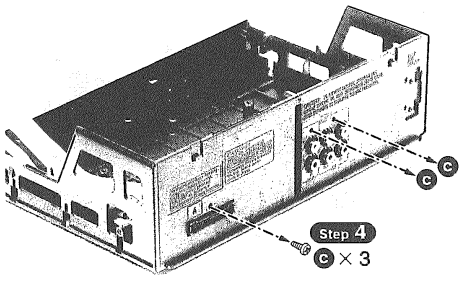
NOTE

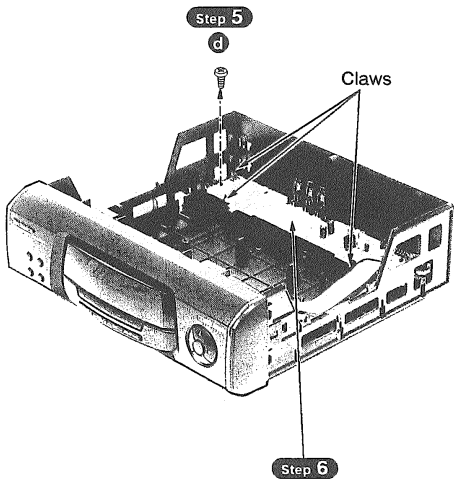
1. This section describes procedures for checking the operation of the major printed circuit boards and replacing the main components.

2. For reassembly after operation checks or replacement, reverse the respective procedures. Special reassembly procedures are described only when required.

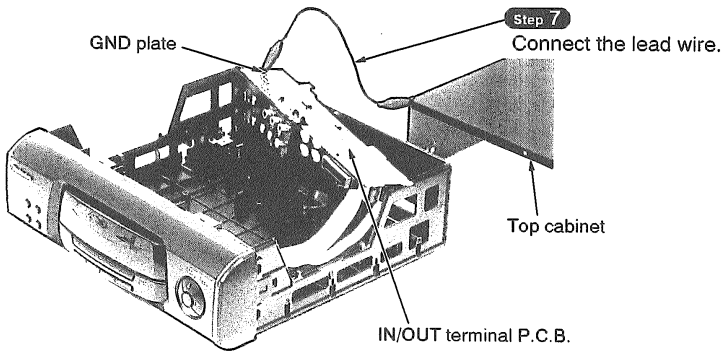
1. Checking for the IN/OUT terminal P.C.B.





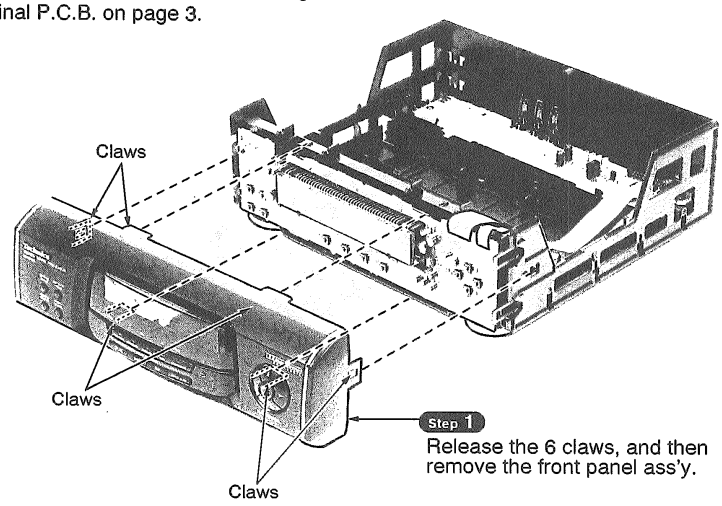


• **Check the IN/OUT terminal P.C.B. as shown below.**

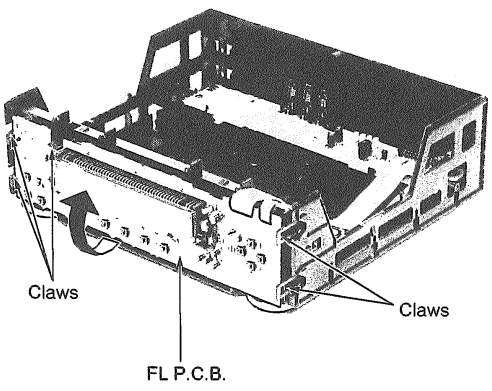


2. Checking for the FL P.C.B.

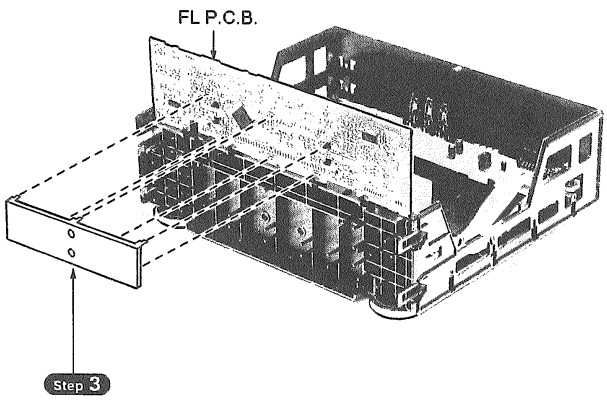
• Follow the Step 1 ~ Step 3 of the item 1 in checking for the IN/OUT terminal P.C.B. on page 3.



Step 2
Release the 5 claws, and then remove the FL P.C.B..



• **Check the FL P.C.B. as shown below.**



■ To Supply Power Source

This unit SH-EH600 is designed to operate on power supplied from the system connected. (For system connection, refer to Fig.1)

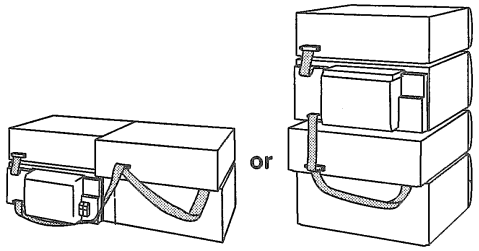
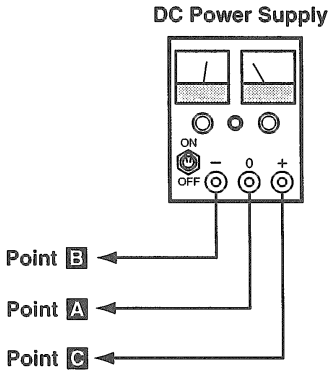
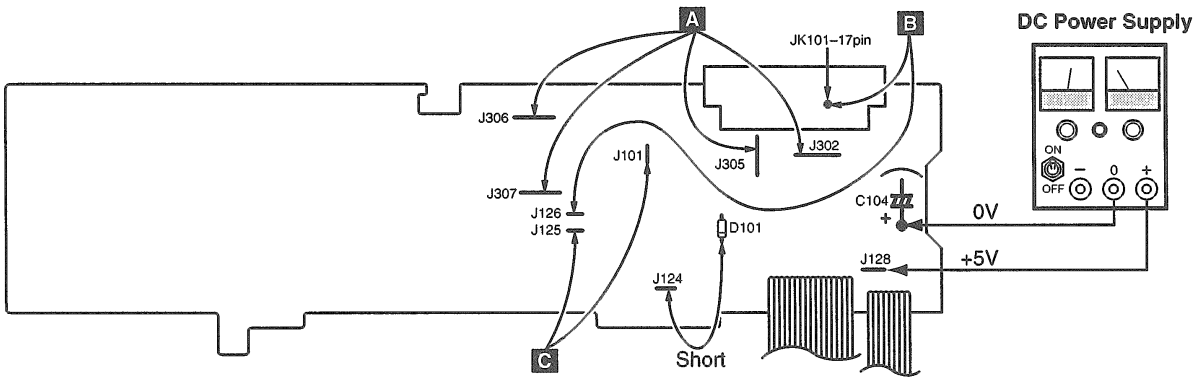


Fig. 1

When you have to test and service the unit SH-EH600 alone, use the following method to supply power source and operate the unit:

1. Short the section between **J124** and **D101**.
2. Short the section **J306, J307, J305** and **J302** with each other. (Point A)
3. Short the section between **J126** and **17 pin** of the connector **JK101**. (Point B)
4. Short the section between **J125** and **J101**. (Point C)
5. Apply +5 V DC power to the section between **J128** and **(+) foil side** of **C104**.
6. Connect the DC power supply as shown below.
   - +12 V terminal of the DC Power Supply connect to Point C .
   - GND terminal of the DC Power Supply connect to Point A .
   - −12 V terminal of the DC Power Supply connect to Point B .

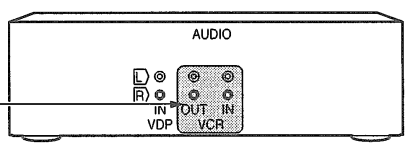




■ To Check Signals

Input the audio signal and confirm in to be outputted from the terminal.

	INPUT	OUTPUT
L-ch	AUDIO IN	AUDIO OUT
R-ch	VCR	VCR



■Schematic Diagram

Page

A FL CIRCUIT 7, 8

B IN/OUT TERMINAL CIRCUIT 8

- This schematic diagram may be modified at any time with the development of new technology.

Notes:

- **S301**: EQ SPACE on/off switch (EQ SPACE ON/FLAT)
- **S302**: Acoustic image EQ switch (ACOUSTIC IMAGE EQ)
- **S303**: EQ SPACE preset/manual select switch (PRESET/MANUAL)
- **S304**: Display mode select/demonstration switch (DISP MODE/–DEMO)
- **S305**: DOLBY PRO LOGIC on/off switch (OFF/ON)
- **S306**: DOLBY PRO LOGIC mode select switch (MODE)
- **S307**: DOLBY PRO LOGIC test signal switch (TEST)
- **S308**: DOLBY PRO LOGIC center mode select switch (CENTER MODE)
- **S310 ~ S313** : Multi control switch
  (MULTI CONTROL , S310 : ▼ , S311 : ◄ , S312 : ▲ , S313 : ►)

- Indicated voltage values are the standard values for the unit measured by the DC electronic circuit tester (high-impedance) with the chassis taken as standard. Therefore, there may exist some errors in the voltage values, depending on the internal impedance of the DC circuit tester.

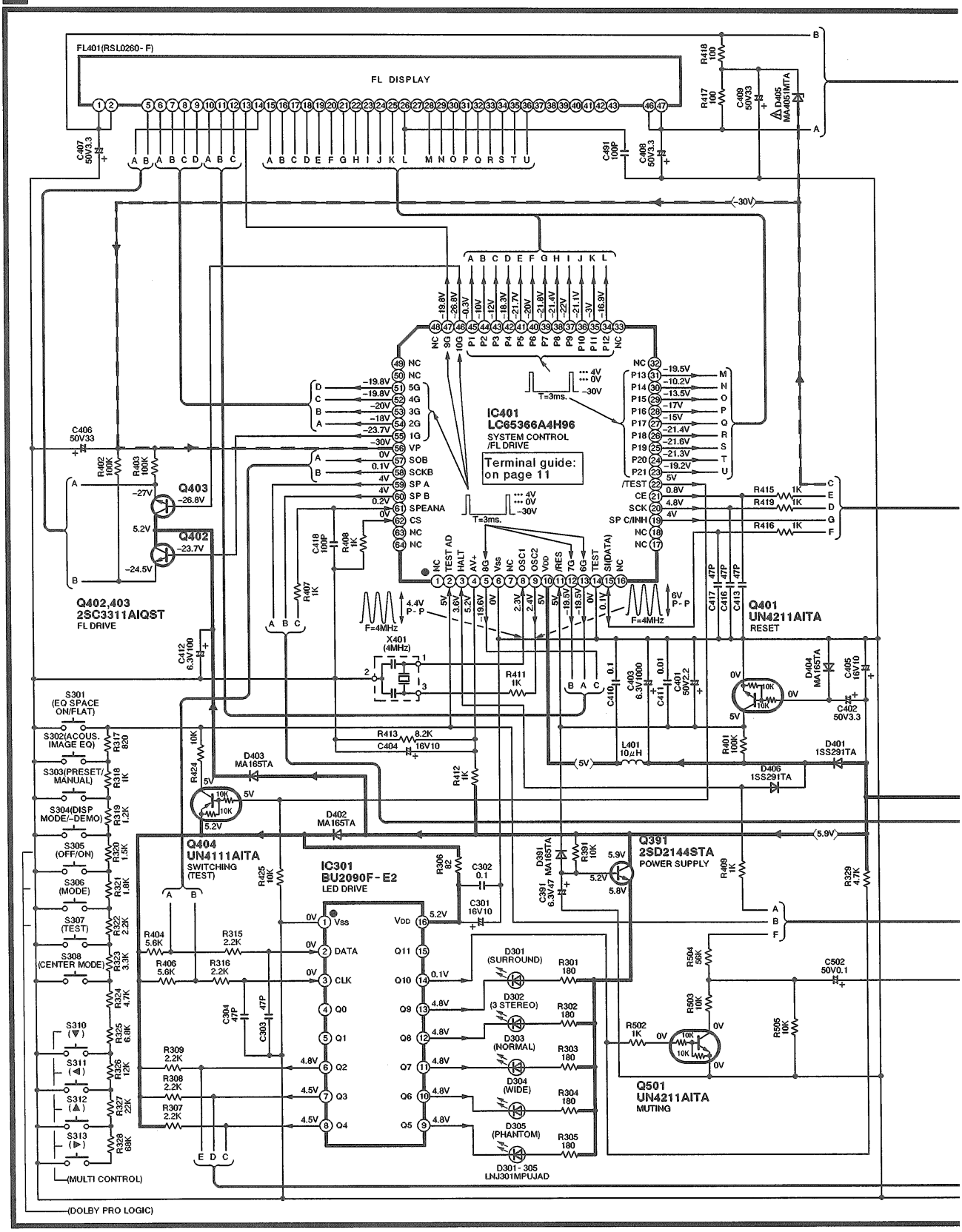
- Voltage values and waveforms are measured as indicated in the schematic diagram when test points between DG and CT-G , and between AG and DG are shorted.

- Important safety notice:
  Components identified by ⚠ mark have special characteristics important for safety.
  Furthermore, special parts which have purposes of fire-retardant (resistors), high-quality sound (capacitors), low-noise (resistors), etc. are used.
  When replacing any of components, be sure to use only manufacturer's specified parts shown in the parts list.

- **Caution!**
  IC and LSI are sensitive to static electricity.
  Secondary trouble can be prevented by taking care during repair.
  Cover the parts boxes made of plastics with aluminum foil.
  Ground the soldering iron.
  Put a conductive mat on the work table.
  Do not touch the legs of IC or LSI with the fingers directly.

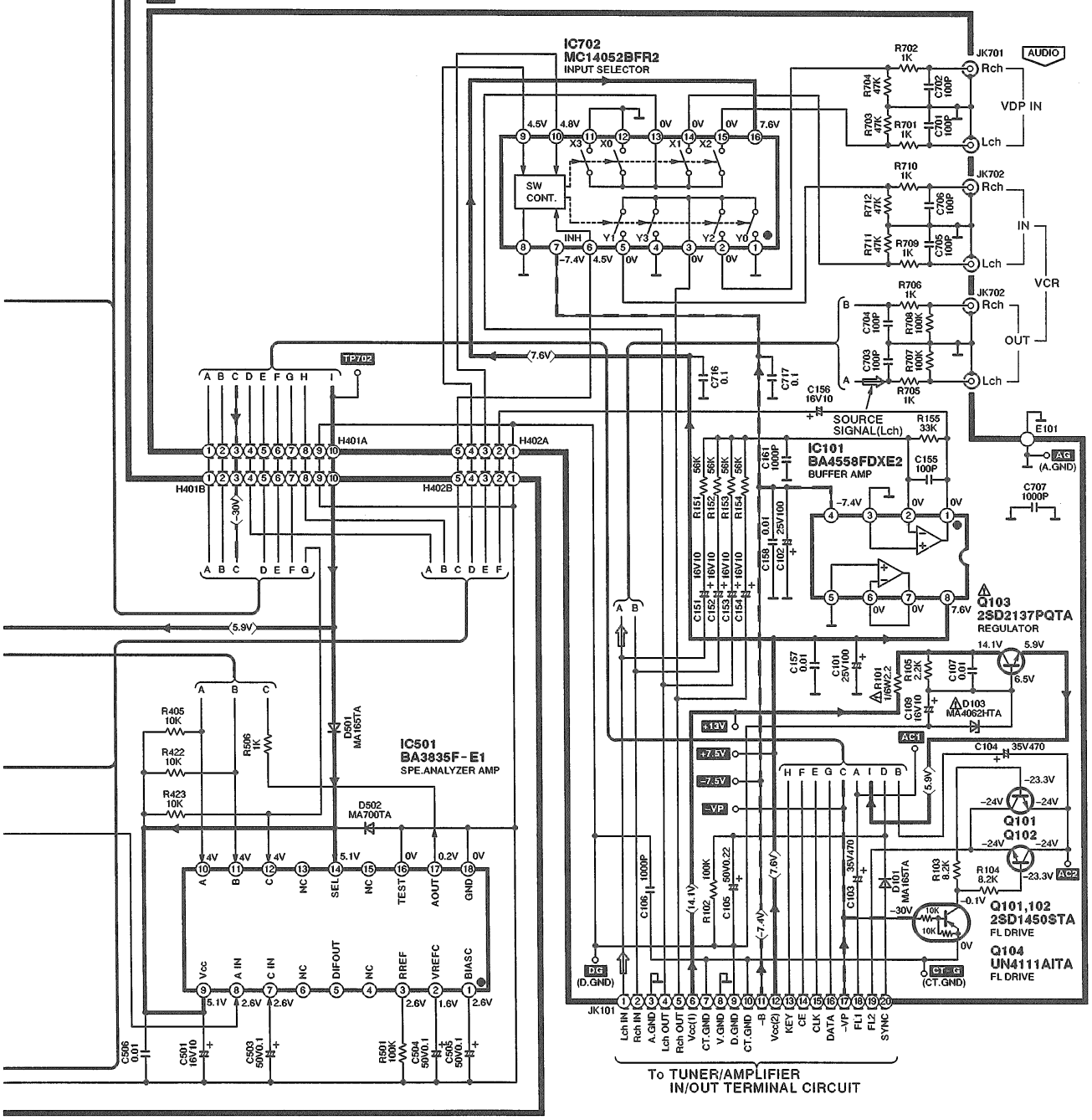
- **Voltage and signal line**
  : Positive voltage line
  : Negative voltage line
  : Source signal line (L-ch)

A FL CIRCUIT (P.C.Board:on page 9)



: Positive voltage line : Negative voltage line : Source signal line (L-ch)

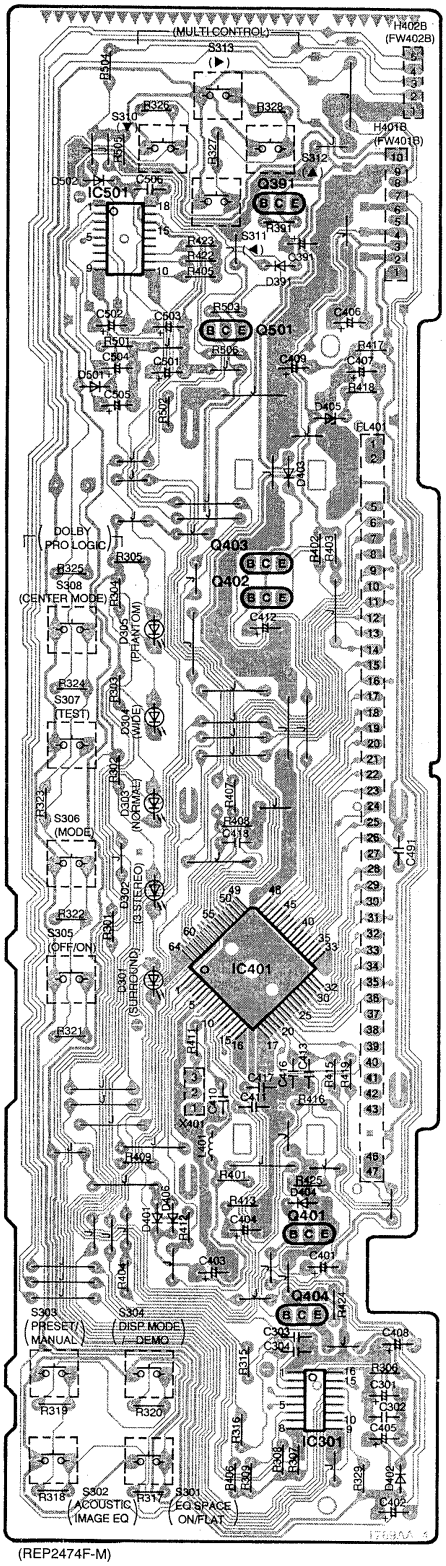
B IN/OUT TERMINAL CIRCUIT (P.C.Board:on page 9)



■ Printed Circuit Board Diagram

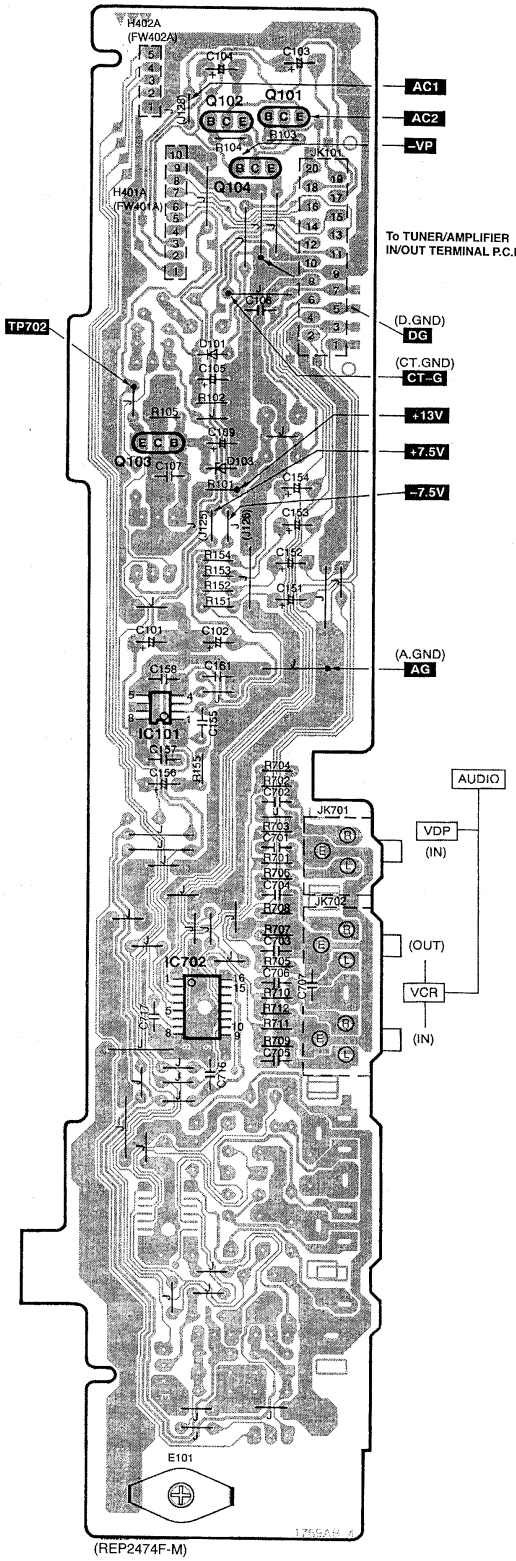
• This circuit board diagram may be modified at any time with the development of new technology.

A FL P.C.B.



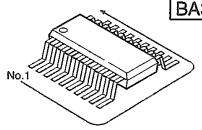
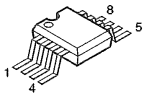
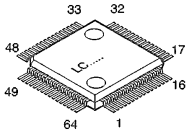
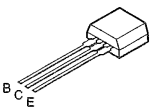
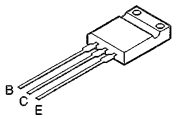
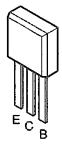
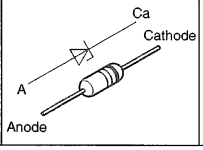
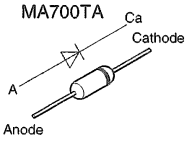
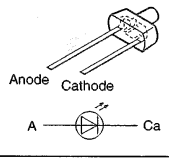
(REP2474F-M)

B IN/OUT TERMINAL P.C.B.

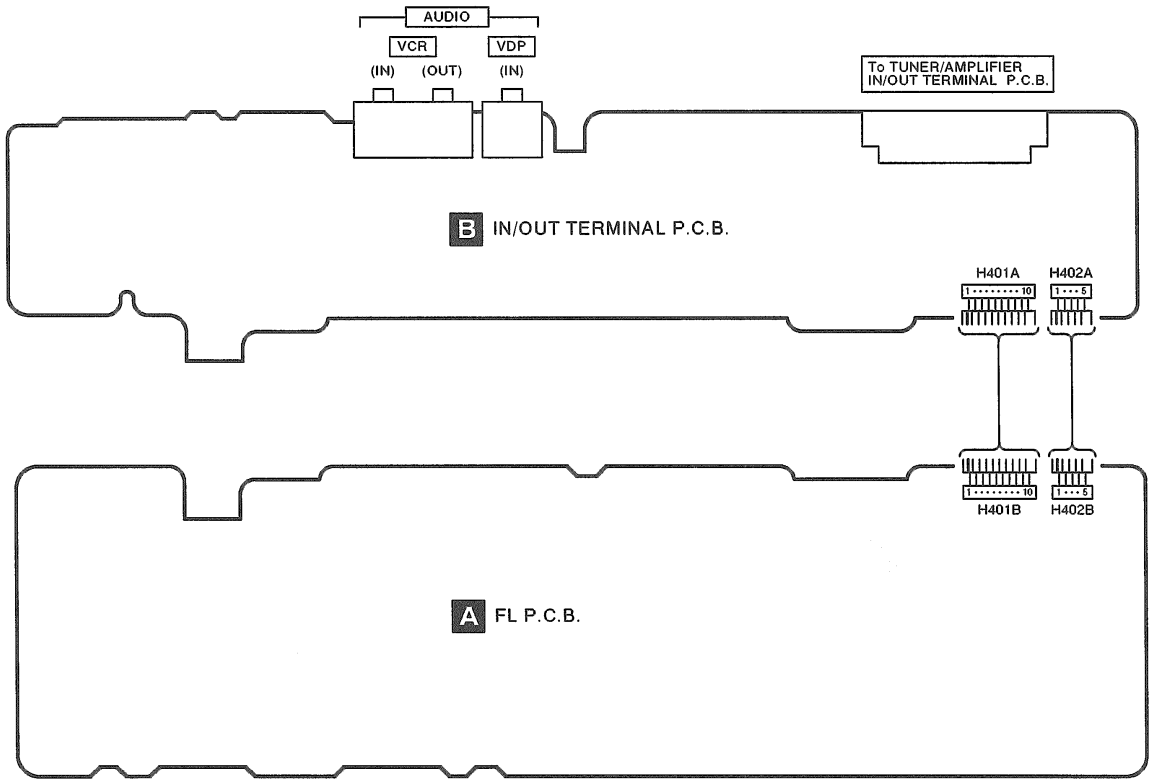


(REP2474F-M)

■ Type Illustration of IC's, Transistors and Diodes

BU2090F-E2 16PIN MC14052BFR2 16PIN BA3835F-E1 18PIN 	BA4558FDXE2 	LC65366A4H96 	2SD2144STA 	2SD2137PQTA 
 2SC3311AIQST 2SD1450STA UN4111AITA UN4211AITA	MA4051MTA MA4062HTA 	1SS291TA MA165TA MA700TA 	LNJ301MPUJAD 	

■ Wiring Connection Diagram



■ Terminal Function of IC's

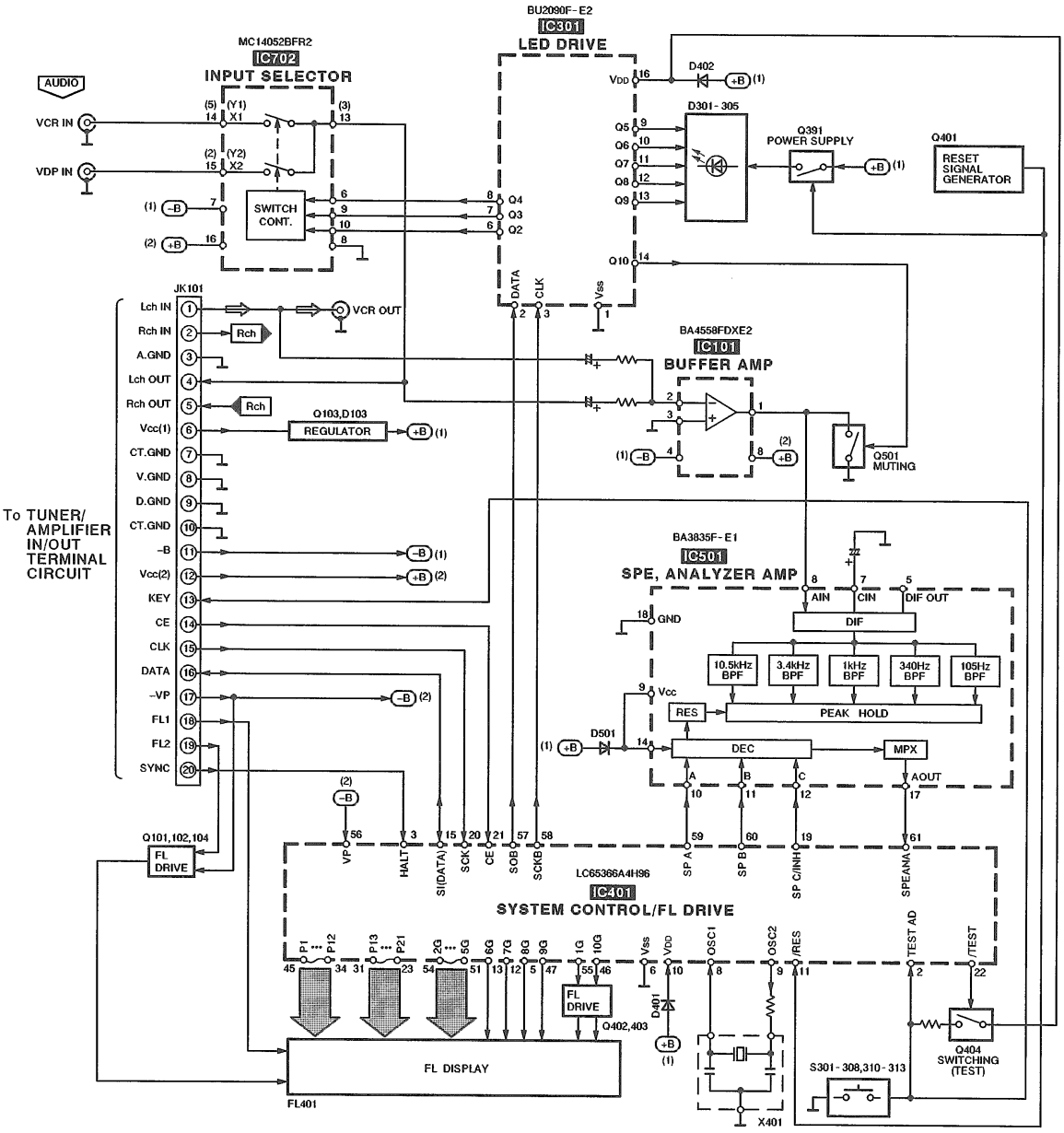
● IC401 (LC65366A4H96) : System Control / FL Drive

Pin No.	Terminal Name	I/O	Function
1	NC	—	No used, open
2	TEST AD	I	TEST mode key signal input
3	HALT	I	Power failure detect signal input
4	AV+	—	Power supply for analog circuit (+5 V)
5	8G	O	Grid signal output
6	VSS	—	GND terminal
7	NC	—	No used, open
8	OSC1	I	Oscillator connected terminal (4 MHz)
9	OSC2	O	
10	VDD	—	Power supply
11	/RES	I	Reset signal input
12, 13	7G, 6G	O	Grid signal output
14	TEST	—	No used, connected to VSS
15	SI	I/O	Communication data signal input/output
16~18	NC	—	No used, open
19	SP C/INH	O	Select terminal for Spectrum analizer IC output
20	SCK	O	Serial communication signal output (Clock signal output)

Pin No.	Terminal Name	I/O	Function
21	CE	O	Serial communication signal output (Chip enable signal output)
22	/TEST	O	Test signal terminal
23~31	P21~P13	O	Segment signal output
32, 33	NC	—	No used, open
34~45	P12~P1	O	Segment signal output
46, 47	10G, 9G	O	Grid signal output
48~50	NC	—	No used, open
51~55	5G~1G	O	Grid signal output
56	VP	—	Negative power supply
57	SOB	O	Serial data signal output
58	SCKB	O	Serial clock signal output
59	SP A	O	Select terminal from spectrum analizer IC output
60	SP B	O	
61	SPEANA	I	Analog signal input from spectrum analizer IC
62	CS	I	Chip select signal input terminal
63, 64	NC	—	No used, open

■ Block Diagram

NOTES:
1) ( )INDICATES Pin No.OF RIGHT CHANNEL.
2) ⇨ :SOURCE SIGNAL



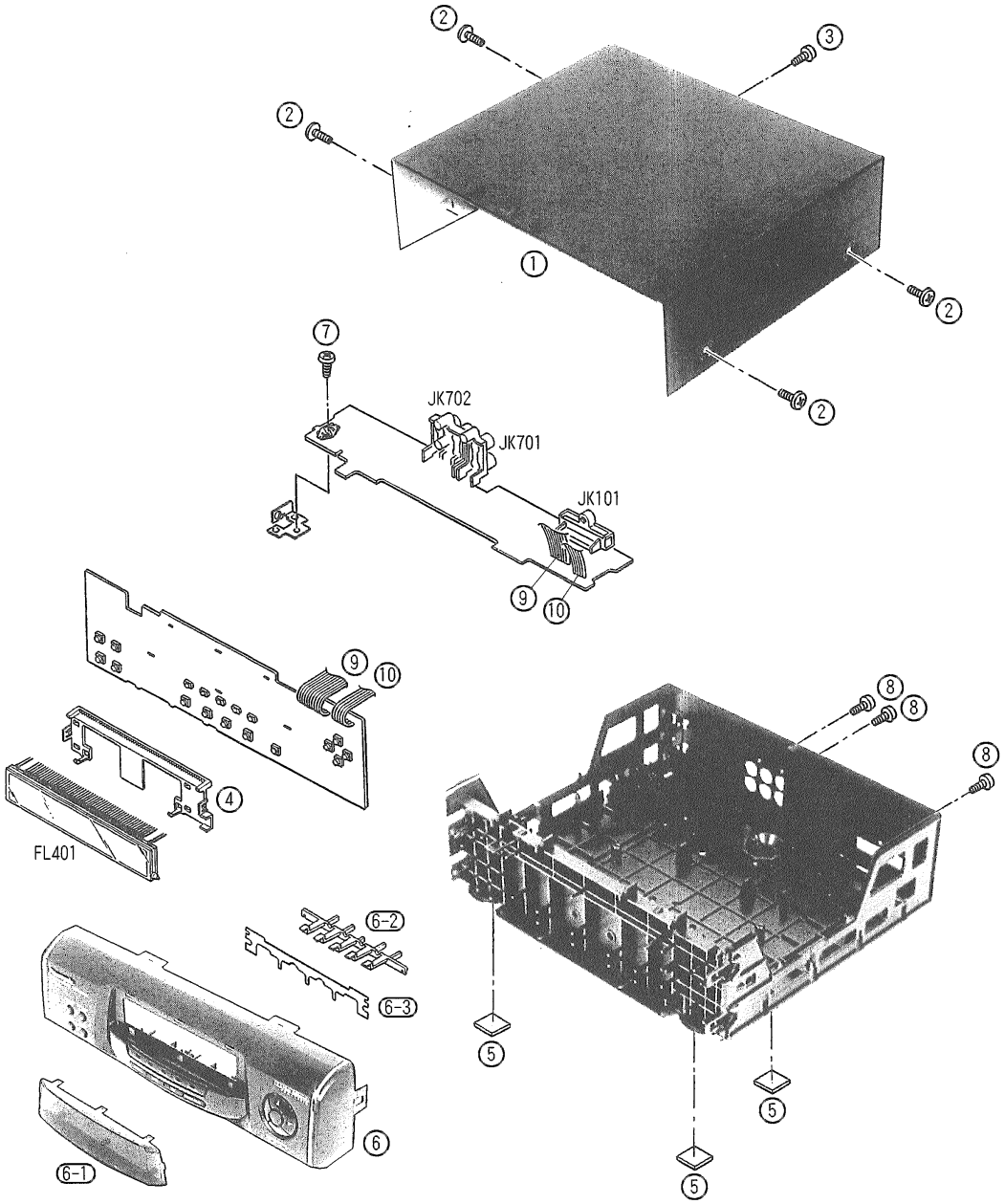
■ Replacement Parts List

Notes: *Important safety notice:
Components identified by ⚠ mark have special characteristics important for safety.
Furthermore, special parts which have purposes of fire-retardant (resistors), high-quality sound (capacitors), low-noise (resistors), etc. are used.
When replacing any of components, be sure to use only manufacture's specified parts shown in the parts list.
*All parts are supplied by MESA.

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
1	RKM0302-H	CABINET	1	
2	RHD30007-K1	SCREW (BLACK)	4	
3	XTB3+8JFZ	SCREW (BLACK)	1	
4	RMN0424	FL HOLDER	1	
5	RKA0089-K	RUBBER	3	
6	RYP0733N-H	FRONT PANEL ASS'Y	1	
6-1	RKW0504-V	FL PANEL	1	
6-2	RGL0358-Q	LENS	1	
6-3	RMZ0423	SHEET	1	
7	XTBS3+8JFZ1	SCREW	1	
8	XTB3+8JFZ	SCREW	3	
9	RWJ5710240UU	FLAT CABLE(H401A/10P)	1	
10	RWJ5705240UU	FLAT CABLE(H402A/5P)	1	
C101,02	ECA1EM101B	25V 100U	2	
C103,04	RCE1VM471BV	35V 470U	2	
C105	ECEA1HKAR22B	50V 0.22U	1	
C106	ECBT1H102KB5	50V 1000P	1	
C107	ECBT1E103ZF5	25V 0.01U	1	
C109	RCE1CKA100BG	16V 10U	1	
C151-54	RCE1CKA100BG	16V 10U	4	
C155	ECBT1H101KB5	50V 100P	1	
C156	RCE1CKA100BG	16V 10U	1	
C157,58	ECBT1E103ZF5	25V 0.01U	2	
C161	ECBT1H102KB5	50V 1000P	1	
C301	RCE1CKA100BG	16V 10U	1	
C302	ECBT1H104ZF5	50V 0.1U	1	
C303,04	ECBT1H470J5	50V 47P	2	
C391	RCE0JKA470BG	6.3V 47U	1	
C401	ECEA1HKA2R2B	50V 2.2U	1	
C402	RCE1HKA3R3BG	50V 3.3U	1	
C403	RCE0JU102BV	6.3V 1000U	1	
C404,05	RCE1CKA100BG	16V 10U	2	
C406	ECEA1HKA330B	50V 33U	1	
C407,08	RCE1HKA3R3BG	50V 3.3U	2	
C409	ECEA1HKA330B	50V 33U	1	
C410	ECBT1H104ZF5	50V 0.1U	1	
C411	ECBT1E103ZF5	25V 0.01U	1	
C412	ECEA0JKS101B	6.3V 100U	1	
C413	ECBT1H470J5	50V 47P	1	
C416,17	ECBT1H470J5	50V 47P	2	
C418	ECBT1H101KB5	50V 100P	1	
C491	ECBT1H101KB5	50V 100P	1	
C501	RCE1CKA100BG	16V 10U	1	
C502-05	ECEA1HKA0R1B	50V 0.1U	4	
C506	ECBT1E103ZF5	25V 0.01U	1	
C701-06	ECBT1H101KB5	50V 100P	6	
C707	ECBT1H102KB5	50V 1000P	1	
C716,17	ECBT1H104ZF5	50V 0.1U	2	
D101	MA165	DIODE	1	
⚠ D103	MA4062-H	DIODE	1	
D301-05	LNJ301MPUJAD	LED	5	
D391	MA165	DIODE	1	
D401	1SS291TA	DIODE	1	
D402-04	MA165	DIODE	3	
⚠ D405	MA4051MTA	DIODE	1	
D406	1SS291TA	DIODE	1	
D501	MA165	DIODE	1	
D502	MA700TA	DIODE	1	
E101	SNE1004-2	EARTH TERMINAL	1	
FL401	RSL0260-F	DISPLAY TUBE	1	
IC101	BA4558FDXE2	IC	1	
IC301	BU2090F-E2	IC	1	
IC401	LC65366A4H96	IC	1	
IC501	BA3835F-E1	IC	1	
IC702	MC14052BFR2	IC	1	
JK101	RJT065K20	SYSTEM	1	
JK701	SJF3068-7N	VDP IN	1	
JK702	SJF3069N	VCR	1	

Ref.No.	Part No.	Part Name & Description	Pcs	Remarks
L401	RLQA100JT-Y	COIL	1	
Q101,02	2SD1450STA	TRANSISTOR	2	
⚠ Q103	2SD2137PQTA	TRANSISTOR	1	
Q104	UN4111	TRANSISTOR	1	
Q391	2SD2144STA	TRANSISTOR	1	
Q401	UN4211	TRANSISTOR	1	
Q402,03	2SC3311AIQST	TRANSISTOR	2	
Q404	UN4111	TRANSISTOR	1	
Q501	UN4211	TRANSISTOR	1	
⚠ R101	ERQ16NKW2R2E	1/6W 2.2	1	
R102	ERDS2FJ104	1/4W 100K	1	
R103,04	ERDS2TJ822T	1/4W 8.2K	2	
R105	ERDS2FJ222	1/4W 2.2K	1	
R151-54	ERDS2TJ563T	1/4W 56K	4	
R155	ERDS2TJ333T	1/4W 33K	1	
R301-05	ERDS2FJ181	1/4W 180	5	
R306	ERDS2TJ820T	1/4W 82	1	
R307-09	ERDS2FJ222	1/4W 2.2K	3	
R315,16	ERDS2FJ222	1/4W 2.2K	2	
R317	ERDS2TJ821T	1/4W 820	1	
R318	ERDS2FJ102	1/4W 1K	1	
R319	ERDS2TJ122T	1/4W 1.2K	1	
R320	ERDS2TJ152T	1/4W 1.5K	1	
R321	ERDS2TJ182T	1/4W 1.8K	1	
R322	ERDS2FJ222	1/4W 2.2K	1	
R323	ERDS2TJ332T	1/4W 3.3K	1	
R324	ERDS2FJ472	1/4W 4.7K	1	
R325	ERDS2FJ682	1/4W 6.8K	1	
R326	ERDS2TJ123T	1/4W 12K	1	
R327	ERDS2TJ223T	1/4W 22K	1	
R328	ERDS2TJ683T	1/4W 68K	1	
R329	ERDS2FJ472	1/4W 4.7K	1	
R391	ERDS2FJ103	1/4W 10K	1	
R401-03	ERDS2FJ104	1/4W 100K	3	
R404	ERDS2TJ562	1/4W 5.6K	1	
R405	ERDS2FJ103	1/4W 10K	1	
R406	ERDS2TJ562	1/4W 5.6K	1	
R407-09	ERDS2FJ102	1/4W 1K	3	
R411,12	ERDS2FJ102	1/4W 1K	2	
R413	ERDS2TJ822T	1/4W 8.2K	1	
R415,16	ERDS2FJ102	1/4W 1K	2	
R417,18	ERDS2FJ101	1/4W 100	2	
R419	ERDS2FJ102	1/4W 1K	1	
R422-25	ERDS2FJ103	1/4W 10K	4	
R501	ERDS2FJ104	1/4W 100K	1	
R502	ERDS2FJ102	1/4W 1K	1	
R503	ERDS2FJ103	1/4W 10K	1	
R504	ERDS2TJ563T	1/4W 56K	1	
R505	ERDS2FJ103	1/4W 10K	1	
R506	ERDS2FJ102	1/4W 1K	1	
R701,02	ERDS2FJ102	1/4W 1K	2	
R703,04	ERDS2TJ473T	1/4W 47K	2	
R705,06	ERDS2FJ102	1/4W 1K	2	
R707,08	ERDS2FJ104	1/4W 100K	2	
R709,10	ERDS2FJ102	1/4W 1K	2	
R711,12	ERDS2TJ473T	1/4W 47K	2	
S301-08	EVQPTD05Q	SW	8	
S310-13	EVQPTD05Q	SW	4	
X401	EF0EC4004T4	OSCILLATOR	1	

■ Cabinet Parts Location



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